



VOSH Hazard Information Bulletin

Potential Carbon Dioxide (CO₂) Asphyxiation Hazard in the Food Service Industry

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Hazard Information Bulletin: Potential Carbon Dioxide (CO₂) Asphyxiation in the Food Service Industry

A potential asphyxiation hazard exists when carbon dioxide is used for carbonation in the food service industry. Carbonation systems used in restaurants, cafeterias, and bars use carbon dioxide during beverage dispensing operations. High concentrations of CO₂, which displaces oxygen, can result in death in less than 15 minutes.

Carbon dioxide is a colorless, odorless gas and should be treated as a material with poor warning properties. It is denser than air and high concentrations can persist in open pits and other areas below grade. The current OSHA standard is 5000 ppm as an 8-hour time-weighted average (TWA) concentration.

Gaseous carbon dioxide is an asphyxiant. Concentrations of 10% (100,000 ppm) or more can produce unconsciousness or death. Lower concentrations may cause headache, sweating, rapid breathing, increased heartbeat, shortness of breath, dizziness, mental depression, visual disturbances or shaking. The seriousness of the latter symptoms is dependent on the concentration of carbon dioxide and the length of time the individual is exposed. The response to carbon dioxide inhalation varies greatly even in healthy normal individuals.

To minimize the development of hazardous conditions that may cause accidents or fatalities involving CO₂ exposure:

1. Personnel operating CO₂ carbonation systems should be thoroughly familiar with the hazards associated with this product.
2. Develop and implement a procedure to monitor the atmosphere for CO₂ and provide local ventilation where levels may exceed the PEL. Do not depend on measuring the oxygen content of the air because elevated levels of carbon dioxide can be toxic, even with adequate oxygen for life support.
3. We recommend that appropriate warning signs be affixed outside of those areas where high concentrations of carbon dioxide gas can accumulate. Recommended language is shown below:

CAUTION - CARBON DIOXIDE GAS

Ventilate the Area.

A High CO₂ Gas Concentration

May Occur in this Area

And May Cause Suffocation.

4. Establish a procedure for inspection and maintenance, at regular intervals, of all piping tubing, hoses, and fittings. The entire system should be maintained by qualified personnel in accordance with the manufacturer's instructions.

5. For further information on carbon dioxide supply systems and related topics, the following Compressed Gas Association, Inc. (CGA) pamphlets should be consulted. These pamphlets are designed to assist restaurant personnel, other users, inspectors and all interested parties.

CGA G-6.5-1992, Standard for Small Stationary Low Pressure, Carbon Dioxide Supply Systems

CGA G-6.4-1992, Safe Transfer of Low Pressure Liquefied Carbon Dioxide in Cargo Tanks, Tank Cars, and Portable Containers

CGA G-6.3-1995, Carbon Dioxide Cylinder Filling and Handling Procedures

CGA G-6-1984, Carbon Dioxide

CGA G-6.2-1994, Commodity Specification for Carbon Dioxide

CGA G-6.6-1993, Standard for Elastomer-Type Carbon Dioxide Bulk Transfer Hose